

**The Boreal American Species of CHLORIPPE (Doxocopa, Apatura) Lepidoptera.**

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The species of *Chlorippe* found in America north of Mexico can readily be divided into two distinct groups by the character of the markings. They may be called the CELTIS GROUP and the CLYTON GROUP.

The CELTIS GROUP is characterized by having one or more ocelli on the primary wings and a number of white spots. The CLYTON GROUP never has ocelli on the primaries and seldom if ever any pure white spots.

In the CELTIS GROUP there is a black spot, sometimes an ocellus, on the inner margin of the underside of the secondaries, about half-way from the base to the angle of the wing. In some cases it is a mere point, but in other specimens or species an oblong ocellus. This spot is never found in the members of the CLYTON GROUP.

According to our lists and catalogues the names falling in the first or CELTIS GROUP would be *celtis*, *antonia*, *montis*, *leilia*, *cocles*, *alicia*. In the CLYTON GROUP, *clyton*, *proserpina*, *ocellata*, *nig*, *flora*. In the CELTIS GROUP, *celtis* and *alicia* may be separated from the remainder owing to the fact that there is a single *ocellus* on the primaries above the third median nervule. *Alicia* is larger than *celtis* and the color is reddish tawny and all the spots and markings are relatively larger. *Antonia* has two ocelli on the upperside of the primaries and three on the underside. It also has three fuscous spots in the discoidal cell on upperside of primaries. *Leilia* is redder than any other in the group (reddish chestnut) and has two ocelli, but only two fuscous spots in the discoidal cell, and these spots are separated by a comparatively light colored area or spot. *Leilia* is a small form from Sonora, Mexico, and Arizona. The hind wings are somewhat lengthened and concave or excavated on the outer margin. *Montis* is only slightly different from the Texan

*antonia* and is found in Colorado. It is lighter in color in some specimens and is only a mountain mutation. The type of *cocles* Lintner is a female, and the collections from whence it came were made at Brownsville, Texas, April 1st to 10th; Hidalgo, Texas, April 17th to May 10th; Lomita Ranch, April 14th to May 20th. The latter place is sixty-five miles from Brownsville and seven miles from Hidalgo. We possess the type of *cocles* and four other specimens, all females. One from Arizona (H. K. Morrison, 1883) and three from Round Mountain, Blanco County, Texas, June 29th to 31st (F. C. Schaupp). *Cocles*, I believe, is the female of *antonia*. The specimens of *antonia* in our collection bear the following data labels; Brunet County, Texas, April 25th; Round Mountain, Texas, June 25th, August 14th, October 15th. Also three specimens from fifty miles North and West of Corpus Christi (S. F. Aaron). These specimens are mentioned in Papilio 4, 172, 1884. I am of the opinion that *cocles* is the female of *antonia* because all the specimens I have seen are females, and all the male specimens from the same general locality are *antonia*. Mr. Edwards in his description of *antonia* says, "the species is found in Texas and Arizona. I have received several examples from Boll and Belfrage."

Karl R. Coolidge (Pomona College Journal of Ent., 3, 511, 1911) quotes Aaron and considers *cocles* a synonym of *leilia*. He also considers *antonia* a synonym of *leilia*. This may be true enough if we accept Mr. Coolidge's idea as to what constitutes a species. We are trying to elucidate what nature means by gradation and variation and solve interesting biological problems. These butterflies are distinctly different in appearance and markings, and even though they do intergrade the extremes should have distinctive names. The word species has entirely lost its meaning since the acceptance of the doctrine of evolution. If we put into the synonymy all forms that intergrade we would have very few names of species left and we would not add to the solution of the biological problems involved. On the other hand, I would not have these remarks taken as a license for the

description of slight or intangible variations that would make it impossible for students to unravel their author's meaning.

*Leilia* is a pretty form or variety. The types were two males taken by Mr. Henshaw, of Lieutenant Wheeler's Exploring Expedition, August, 1874, at Camp Lowell and in the Sonoto Valley, Arizona. It is well figured in the "Butterflies of North America," 2, pl. 1. The figure in Dr. Holland's Butterfly Book is more properly the Arizona form of *antonia*, at least from a nomenclatorial standpoint (Pl. 23, fig. 11). Our series of *leilia* are from Sonora and Arizona, taken in 1883 by Morrison. Three specimens like Dr. Holland's figure of *leilia* were taken at Mt. Graham by Morrison in 1882.

The types of *alicia* were from New Orleans, Louisiana. All our specimens are from Florida, and those that bear any more than a State label were taken by Dr. Wittfeld at Georgia on the Indian River.

*Celtis* occurs in the southern half of the United States, east of the Great Plains. Riley says the butterflies appear in eastern Missouri by the middle of June, and that there is a second brood in August. In West Virginia they appear the end of May (Edwards). It has been recorded from as far north as Massachusetts. In New Mexico it is replaced by *antonia* and *leilia*. Our series of specimens are from Kentucky, Tennessee and Texas. The Tennessee specimens were taken at Nashville, June 13th to 24th, and the Texan examples at Black Jack Springs, July 19th.

The *clyton* group is not so complicated and the forms or varieties are fewer. The figure of the species given by Boisduval and Le Conte is a rather poor one, the coloring being rather crude. The figure given by Mr. Edwards under the name var. *ocellata* in his Butterflies of North America, 2, I consider to represent the species and may be taken as typical *clyton*. I do not see any reason for the name *ocellata* he gives it. Variety *proserpina* Scudder has the hind wings much darker and the maculation almost obscured. This is well illustrated on the same plate (figs. 5, 6). Strecker in

his Catl. Butts. N. Am. proposes the name *nig* for a variety which he says has "all the wings obscured with blackish, ocelli obsolete."

The type of *flora* Edwards, came from Palatka, Florida. It was also taken by Dr. Wittfeld at Georgiana (Indian River), Florida. It is lighter in color than *clyton*, being bright orange-ferruginous. It is figured in Edwards' Butts. Nth. Amer., 3, pl. 1, *Apatura*. I do not consider it more than a topomorph.

There is a form of *clyton* found in Texas that appears to be worthy of a varietal name. I have had it sent to me for identification, especially the female. As it causes confusion and collectors do not seem to be able to make it fit any of the described forms, a name for it seems desirable. I propose the name *texana*.

The male expands 46 mm. Primaries buff (orange-ferruginous). There is an outer row of four small, round, yellowish white spots and an inner row of seven spots of the same character but somewhat larger on the primaries. The secondaries are the same color with the usual six black dots. These spots are repeated below and are quite small as compared with those of *flora*. The primaries are practically devoid of black or fuscous and the secondaries also, except the spots. The female expands 60 mm. and is the same color as the male. The maculation on the primaries and secondaries is like that of the male except that the spots are relatively larger, and those of the primaries not so white or distinctly defined. The male type was taken at Round Mountain, Texas, July 31, 1895, by F. G. Schaupp, and the female near Corpus Christi by S. F. Aaron (see *Papilio*, 4, 179, 1884). We have a number of specimens taken in Brunet County, Texas, April 24th, that are likely the first generation of *texana*. They are much darker in color; the spots in the primaries are white or whitish like those in *texana*. This is probably the form Aaron speaks of as *flora* Edw.

The species or forms in this genus are rare in collections and many of them lack proper data. Additional material from many localities, with accurate data and a knowledge of

the life histories will enable the butterflies to be placed more accurately as to their relative standing, but at present I would consider that we have but two species and arrange the other names as varieties or topomorphs as follows:

## CELTIS GROUP.

*Celtis* *Bd.*

var. *antonia* *Edw.*

*cocles* *Lint.*

*montis* *Edw.*

var. *leilia* *Edw.*

var. *alicia* *Edw.*

## CLYTON GROUP.

*Clyton* *Bd.-Lec.*

*ocellata* *Edw.*

var. *proserpina* *Scud.*

var. *nig* *Strecker.*

var. *flora* *Edw.*

var. *texana* *Skinner.*

With one or more ocelli on primaries above and an ocellus or spot on inner margin of secondaries below .....1.

Lacking the above characters.....4.

1. With a single ocellus on primaries above .....2.

    With two ocelli on primaries above.....3.

2. Small species (male expands 43 mm., female expands 53 mm.; ground color light or yellowish-brown.....**celtis.**

    Larger; ground color orange-ferruginous, or dull fulvous...**alicia.**

3. Color yellowish-brown; three spots in discoidal cell in primaries above.....**antonia.**

    Color bright castaneous; two spots in discoidal cell of primaries above .....**leilia.**

4. Both wings of same general color (female); spots of primaries whitish (male); spots in primaries small, outer row 1 mm. in diam.; secondaries 1.5 mm.....**texana.**

    Color of secondaries darker than primaries (female); spots on primaries yellow, not distinctly lighter (male).....5.

5. Primaries rusty fulvous at base, remainder blackish brown.

**clyton.**

    Primaries fulvous at base and remainder of wing orange-ferruginous (tawny).....**flora.**